

Case report

Panuveitis and dermal vasculitis following MMR vaccination

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Introduction

Although anterior uveitis and skin and visceral involvement has been reported in association with measles, mumps and rubella (MMR) vaccination [1–4], we are unaware of previous reports of panuveitis. In 2004, millions of Iranians were immunized with the live attenuated MMR vaccine during a mass vaccination project. We present a case of panuveitis and dermal vasculitis that developed shortly after MMR vaccination. The patient was diagnosed, investigated and followed up at the Khatam-al-Anbia eye centre, Mashad.

Case report

A previously healthy 17-year-old girl was admitted to Sabzevar hospital on 29 December 2003 due to a generalized maculopapular skin rash with fever and chills which developed 3 days after receiving the MMR vaccine. Her medical and ocular histories were unremarkable. Two days after hospitalization she complained of progressive visual loss, red eyes and pain. On ophthalmological examination best corrected vision was 6/10 in both eyes, tension by applanation tonometry was 14 mmHg in both eyes, biomicroscopy showed perilimbal ciliary flush, keratic precipitates and 3+ cells in the

right eye and 4+ cells in the left eye with moderate flare in both eyes. Anterior uveitis was diagnosed and she received topical prednisolone acetate 1%, 6 times a day and cyclopentolate 1%, 4 times a day. Two days later her symptoms worsened in spite of the topical treatment. Best corrected vision was reduced to hand motion. Biomicroscopy revealed anterior uveitis with hypopyon and severe vitritis.

The patient was referred to Khatam-al-Anbia Eye Centre 4 days after first hospitalization and hospitalized again. On review, the patient was suffering from fever (oral temperature = 39 °C), generalized maculopapular skin rash and knee arthritis (Figure 1). Biomicroscopy disclosed severe ciliary injection in both eyes with keratic precipitates and posterior synechiae; the anterior chamber had severe reaction with 1 mm hypopyon and a severe flare. Severe vitritis was also present. The intraocular pressure was 10 mmHg in the right eye and 8 mmHg in the left eye. In both eyes, fundus examination with dilated pupil showed blurred disk margins with multiple cream-coloured lesions, deep in the retina. By fluorescein angiography, multiple areas of hyperfluorescence with late leakage were revealed in the posterior pole (Figure 2). Skin biopsy showed dermal vasculitis (Figure 3). Blood count showed leukocytosis and neutrophilia.

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Figure 1 Generalized maculopapular skin rash and knee arthritis after MMR vaccination in a previously healthy 17-year-old girl

Her C reactive protein and erythrocyte sedimentation rate were moderately elevated. The patient had a negative protein purified derivative (PPD) and VDRL. Antinuclear antibodies, rheumatoid factor, HLA-B5 and HLA-B27 were also negative. She had normal chest and sacroiliac joint radiographs. Angiotensin-converting enzyme level was

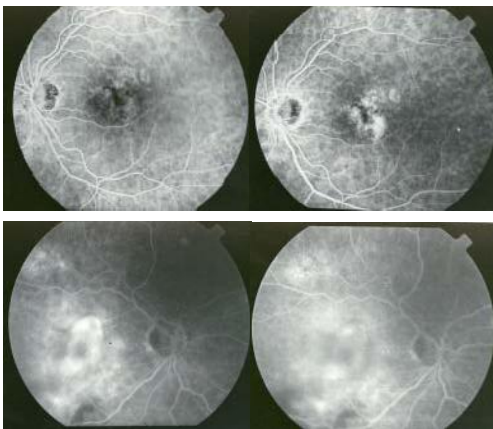


Figure 2 Fluorescein angiography showing multiple areas of hyperfluorescence with late leakage in posterior pole (Quality of fluorescein angiograph of right eye was not good because of hazy vitreous)

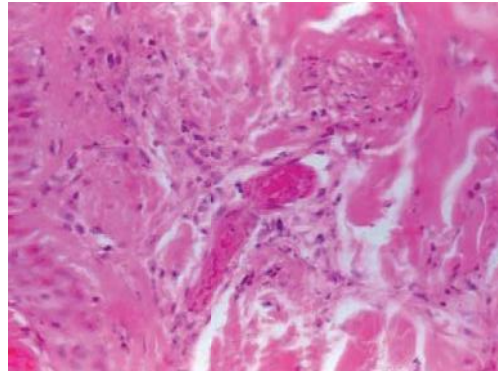


Figure 3 Skin biopsy showing acute inflammatory reaction (polymorphonuclear cell infiltration) and fibrinoid necrosis in wall of vessel due to dermal vasculitis

normal. Urine examination did not reveal any abnormal finding. The patient was diagnosed with bilateral panuveitis and was given intravenous methylprednisolone, 1 g/day, in addition to topical medication. After 3 days of therapy, the anterior chamber reaction was reduced significantly (2+ cells and flare with no hypopyon). Vitritis was also moderately reduced. Visual acuity had corrected to 3/10 level and the skin rash had resolved partially with faint pigmentation.

The patient was discharged with oral prednisolone 1 mg/day in addition to topical prednisolone acetate 1%, 4 times a day and cyclopentolate 1%, 4 times a day. After 10 days, oral prednisolone was gradually reduced and then discontinued. Regular follow-up and adjustment of the corticosteroid eye drops led to complete control of uveitis after 1 month. At follow-up 6 months later, the patient was free of cells and aqueous flare and she returned to a corrected vision of 10/10 in the right eye; however, the best corrected vision in the left eye was reduced to 6/10. By slit lamp examination of the left eye, iris atrophy, posterior synechiae and

posterior capsular cataract were identified (Figure 4). Examination of the right eye showed no significant change. Intraocular pressure in both eyes was within the normal limit. Fundoscopy of both eyes was normal in spite of a vitreous band without any traction on the retina in the left eye (Figure 5).

Discussion

In our case, the severe bilateral panuveitis after MMR vaccination could have been due to various causes:

1. Immunization: Initial immunization may play a role in uveitis irrespective of the etiologic factor. Based on this reality, several models of uveitis have been developed for experimental purposes [5–9]. Retinal S antigen induced uveitis [5,6,9], interphotoreceptor retinoid binding protein induced uveitis [7,9], lipopolysaccharide [10] and lipoteicoic acid [11] induced uveitis are examples of such experimental animal models. In all these models, initial immunization is essential to induce inflammation. During immunization viral antigen or tissue

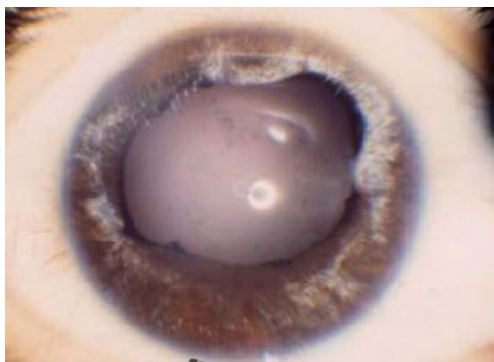


Figure 4 Slit lamp examination of left eye showing iris atrophy, posterior synechiae and posterior capsular cataract

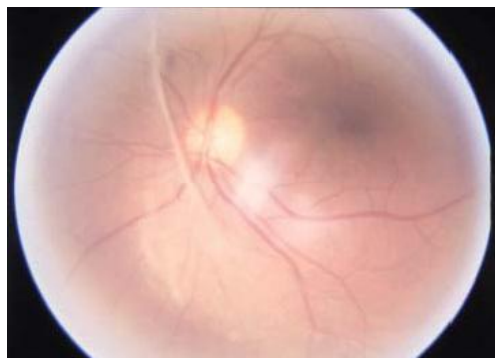


Figure 5 Fundoscopy of left eye was normal in spite of vitreous band without any traction on retina

culture products may also initiate the early events in the immune activation pathway to induce uveitis by antigen mimicry.

2. Other toxins or antigens: Contamination of the vaccine with other toxins or antigens or modification of the vaccine due to faulty preservation may play a role in the induction of uveitis.
3. Coincidence: Although the possibility of mere coincidence cannot be excluded, no signs or symptom of other causes were detected at the onset and during the 6 months of follow-up. It should be added that the patient had negative PPD and VDRL, antinuclear antibodies, rheumatoid factor, HLA-B5 and HLA-B27.
4. Viral uveitis: It is possible that the live attenuated viruses of the MMR vaccine caused uveitis. Mild anterior uveitis has been seen in several systemic viral diseases such as measles, influenza and rubella [12] but we could not find any report of panuveitis.

The clinical data suggest that the vaccine was a precipitating factor. Acute posterior

multifocal placoid pigment epitheliopathy following hepatitis B vaccine [13], anterior uveitis following varicella vaccine [14] and 2 cases of anterior uveitis 4 and 6 weeks after combined MMR vaccination [1] have been reported.

We searched MEDLINE from 1966 to 2005 and the bibliography lists from retrieved articles but we were unable to find a similar case, especially post-vaccination panuveitis. To our knowledge, therefore, this is the first report of such an association.

In conclusion, panuveitis and dermal vasculitis may occur following MMR vac-

ination. Although most cases of adverse reactions to vaccination are mild, in exceptional cases there may be serious consequences such as panuveitis or uveitis that may result in permanent sequelae and visual loss. Our observations call for ophthalmic awareness after MMR vaccination cases when ocular symptoms develop. In the future closer monitoring of all cases of vaccination, especially those in adolescents, is advocated since early therapy is obviously important.

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Regional conference on the role of information and communications technology and emergency telecommunications in disaster relief and management Alexandria, Egypt, 14–17 April 2007

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